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Press Play to Grow!

Designing Video Games as Trojan Horses for Catalyzing Human Development

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Learning can and should be hard fun!

- Clark N. Quinn, e-learning & video game designer, Quinnovation.

We are already the most overinformed, underreflective people in the history of civilization. Is it possible the twenty-first century needs a new kind of learning and a new kind of leader to help us …? Perhaps [we can] begin building not simply an information highway but a transformation highway.

- Robert Kegan, professor & developmental psychologist, Harvard University.

My main intention in this paper is to explore new and alternative video game designs to promote overall and healthy human development based on specific methodological frameworks, and how to make these video games to be both conceptually, technically, and economically feasible to be designed and produced. It is also my intention to propose video games that can simultaneously (or specifically) adapt to different audiences, types, and styles of players, balancing entertainment and developmental purposes by using skillful and integrative strategies based on a proactive *Trojan Horse* approach. In other words, these purposes will not necessarily need to be explicitly presented within the video games, but just put in motion through underlying and customizable developmental tools intrinsically embedded in their structural design, in contrast with a top-down", "forced upon" or preaching approach.

In order to explore these developmental potentials, I have been engaged in an ongoing 11-month long *mixed-methods research*[1], composed by six different methodologies designed to investigate the psychological, technical, cultural, systemic, and social aspects of video games and the gaming world – and how to start incorporating developmental tools in video game design.

[1] See more about mixed-methods research in Appendix B.

From the perspectives of the emergent fields of "post-Piagetian" Developmental Psychology and the emergent field of Integral Psychology[2] founded by the contemporary philosopher and author Ken Wilber[3] - which I will call throughout this paper *integral-developmental psychology - human development*[4] embraces a developmental continuum that integrates both mastering (*horizontal growth*) and transformation (*vertical growth*) of various objective, subjective, and inter-subjective personal traits, including attitudes; beliefs; worldviews; behaviors; cultural, social and relational skills; cognitive functions; technical capacities; and overall health & wellness. This developmental continuum ranges from *"hard skills"* (objective & practical) kinds of growth - e.g., technical skills, and special talents such as math, music and kinesthetic skills; to *"soft skills"* (subjective and inter-subjective) kinds of growth - e.g., behaviors and cognition, self-awareness, self-care, and interpersonal, emotional, cultural, social and moral intelligences; to the most *ontological*, *existential,* and *spiritual*[5] kinds of growth - e.g., environmental care, agnosticism, religious faith, spiritual awareness, and transformative drives.

According to developmental and integral psychology researchers, these traits can

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[2] *Integral Psychology* (Wilber, 2007, 2000) covers a spectrum of models of psychology, therapy, consciousness, and spirituality. It refers to various eastern and western models, both in their pre-modern, modern and post-modern aspects; acknowledging all and finding a right place for every one of them. It also embraces many individual and collective aspects of human development, both in its exterior and interior manifestations, providing an integrated map for understanding of our past, present and future potentials for human development and evolution.

[3] Ken Wilber is the founder of the Integral Institute, including the emergent academic fields of *Integral Theory* and *Integral Psychology,* among many others. Having already written more than 25 books now published in more than 30 languages, Wilber is today "the most translated academic author [in consciousness studies] and arguably the most systematic comprehensive contemporary philosophical thinker" (Marquis, 2008, p. xiii). Wilber participated with philosophical commentaries with Dr. Cornel West in *The Matrix Triology* movies, from the *Ultimate Matrix Collection* DVDs (Warner, 2004).

[4] According to these perspectives, *human development* has a broad meaning based on definitions from Cognitive-behavioral psychology (e.g., Piaget, Skinner), Structuralism (e.g., Piaget), Humanistic/existential psychology (e.g., Maslow, Rogers), and Positive psychology (Seligman) – as well as on conventional developmental definitions from social (e.g., Erikson), economic (e.g., Smith), and educational (e.g., Perry) fields (see more on pages 10-17).

[5] Four basic distinctions of spiritual growth (Wilber, 2007): (1) Moving to the highest levels of development in any *Line of intelligence (see page 10); (2)* Development of a separate *Spiritual Line of intelligence*; (3) Increase of extraordinary *peak experiences* or *altered States* of consciousness, including *State-stage training*; and (4) Nurturance of particularly special or *"spiritual attitudes"* that can be present in any stage of human development, such as love, care, forgiveness, patience, compassion, and wisdom.

improve and transform in qualitative ways within and through different *Levels of Development* related to multiple and often interdependent *Lines of Intelligence* (Wilber, 2007, Gordon & Esbjörn-Hargens, 2007; Marquis, 2008; Gardner, 2006; Torbert, 2004; Cook-Greuter, 2006; Beck & Cowan, 1996; Kegan, 1994; Kolhberg, 1984; Loevinger, 1976; and Maslow, 1973)[6]. Human development is also influenced by the capacity one has to access and master different or altered States of consciousness (e.g., subjective moods, inner states of flow, engagement, relaxation, creativity, openness), and can vary significantly in relation to different personality Types (e.g., Myers-Briggs, Enneagram) (see more details on page 10).

Moreover, one of the fundamental developmental concepts related to integral-developmental psychology is an emphasis on facilitating overall balance and health: Physical, mental, emotional, and spiritual. From the perspective of these emergent fields, human beings are seen as potential self-actualizers, not only as clients or "patients" as in mainstream medical and psychological fields. The focus tends to be on facilitating processes and practices geared towards reaching optimal levels of human potentials and healing, not only on adaptation, functionality, sickness or diseases. Based on that, one of my proposals is to integrate a methodological framework into video game design that involves a broader and deeper concept of human development that naturally promotes holistic health, related to cross-training and balance of mind, heart, body, and spirit (see pages 19-20).

The more video games can provide efficient developmental tools through various kinds of strategically customized applications, the better, more meaningful, healthy, attractive, adaptable, and even "acceptable" these video games can be not only to gamers, but to the overall

[6] Although renowned psychologists such as Freud, Jung, Adler, and Skinner do incorporate some developmental concepts in their theories, they are not considered "developmental psychologists" in the specific sense as I use the term in this paper. While every psychologist studies human development in a broad sense, developmental psychologists specifically focus on stages of identity, maturity, or complexity, including stages that can develop beyond conventional adulthood levels.

population; including teachers, leaders, mentors, healers, therapists, and other guiding professionals[7]. By accomplishing that successfully, video games can extend their influence and popularity into a broader range of players from all kinds of backgrounds, interests, ages and cultures; and hence becoming even more meaningful, useful, pervasive and profitable.

In the next section, I will provide a general introduction about the potential links among video games, education, and human development. I will then present some basic backgrounds and definitions of the main developmental concepts discussed in this paper, in order to facilitate a better understanding. Next, I will further explore some of these educational and developmental aspects in relation to video game applications, referring to existing academic research and bringing specific examples to illustrate how they can be integrated, transformed, and expanded into promoting education towards catalyzing overall personal growth and holistic health. In this exploration, I will provide a brief presentation of two methodological frameworks based in Integral Psychology (Wilber, 2007; 2000): Integral Life Practice (cross-disciplinary developmental training), and Integral Play (which links human development & play), exploring how they could be used to facilitate developmental education and practice through video games. A summary about my Integral Approach to Video Game Design including some of my main research findings and future lines of exploration are also presented in the Appendices A and I.

Linking Video Games, Education and Human Development

In order to situate my proposal in a broader context, it is worth mentioning some contemporary scientific "blinds spots" related to of human development as proposed by this paper, in order to understand how they can be almost imperceptibly reflected in the worlds of

[7] According to David Shaffer (2005) - professor and game scientist in the University of Wisconsin-Madison - in his extensive research on *Epistemic Games*, some educational video games facilitated by teachers and mentors had better learning results then if only left to player's self-learning and exploration.

academy, technology and video games.

In the recent Game Developers Conference 2008, Ray Kurzweil (2008) - a renowned inventor, futurist, and authority on technology today - stated that as technology evolves towards new kinds of subtle, cybernetic, and more embodied interfaces, "*video games and virtual reality simulators will be the main tools used for teaching, training and learning in the next decades…*" (GDC, 2008). For several years, Kurzweil (1999) have been exploring important technological and evolutionary implications related to human development - including various cognitive, biological, behavioural, cultural, social, and even spiritual aspects. I believe that his analysis can greatly benefit by adding a developmental perspective that includes the relationships and integration between those aspects, and some of the fundamental subjective and inter-subjective realities investigated by integral-developmental psychology and research, which integrate various qualitative and quantitative methodologies (see Appendix B). In general, there is still a pervasive lack of information or neglect about these developmental realities coming from many thinkers and academics, since this "blind spot" is reflected in various modern and post-modern scientific paradigms and empirical endeavours that tend to keep such qualitative developmental evidences and relationships still distant from critics and "most of the academic radar" (Wilber, 2007).

In spite of that, I envision that many of Kurzweil's (2008, 1999) technological predictions - especially those related to education and training - could naturally expand to incorporate the use of these video games and virtual reality simulators to facilitate various processes related to human development. In this sense, I consider my current proposal as being a significant step in this overall evolutionary trend, based on the various contributions that video games are already providing to the fields of cultural and social studies, health, training and

education; both formally (intentionally) and informally (collateral) (see more on page 8).

Video Games and Education

One of my initial research findings was the importance of exploring the *field of education* as being a main "bridge" for the use of video games designed towards developmental ends. The educational designer Clark N. Quinn (2005) - one of the advocates of using video games for e-learning – reflects a general consensus in the industry that a specific challenge faced by video game designers today is to find creative, effective and feasible ways to incorporate educational practices that will attract and engage different kinds of players in various contexts. I see similar challenges in the case of incorporating broader human developmental practices into video games, based on educational research and emergent applications related to social issues and human values, such as *Values at Play* from Flanagan, M., Howe, D. & Nissenbaum, H., 2005; and *Epistemic Games* (Shaffer, 2005; Shaffer, Squire, Halverson & Gee, 2005).

In my view though, developmental education can be efficiently incorporated into video game design if applied in skillfully, timely and strategic ways. In a *Serious Games Summit* presentation at the *Game Developers Conference 2008,* Akira Baba, Nobushige Hichibe and Shinsuke Tomiyasu from the University of Tokyo reported that in Japan - differently from the US - there is not a fine line between the concepts of entertainment and non-entertainment. According to their definition, "serious games" are "digital games that are scientifically evaluated by empirical data and analysis … [geared to] improve people's lives." Indeed, improving people's lives and overall health can be considered one of the main proactive "collateral effects" of human development. They also highlighted the great importance of *designing video games based on both empirical analysis and theoretical models,* an insight that is in great alignment

with the developmental and integral theoretical frameworks explored in this paper.

In terms of current educational applications, I found in my research that video games can be generally divided in *three main categories related to different kinds of learning* (Gee, 2007, 2003; Bogost, 2007, 2006; Prensky, 2000; Blunt, 2006; Johnson, 2005; Shaffer, 2005; Flanagan, 2005; Quinn, 2005; and Aldrich 2005, 2003). These types of learning can occur either *directly* (e.g., purposefully designed, such as in "serious games") or *indirectly* (e.g., non-purposefully designed or collateral). Collateral type of learning tends to occur in many video games (Johnson, 2005), but can be especially significant in role playing and adventure games (Gee, 2007). It is worth noting that these three categories can intersect with one-another within a specific video game design. On the one hand, video games can promote:

1. Education to facilitate *acquisition of information*: Formal and Conventional orientation. This kind of learning is important for human development purposes, although it is more connected to less complex cognitive aspects (e.g., memorization).
2. Education to facilitate *learning processes*: Cognitive and Social orientation, also called *Soft or Thinking Skills* by the author and designer of educational simulations Clark Aldrich (2005). This kind of learning has a special importance for the purposes of this study, since it is related to underlying, deeper and more complex cognitive functions, such as explored in David Shaffer's (2005) (see page 5) research on Epistemic Games, and illustrated in the concept of "meta-learning or learning to learn" (Quinn, 2005, p. 184) . According to integral-developmental psychology, these cognitive skills tend to be required (but not necessary) for human development in various *Lines of Intelligence* (e.g., Emotional, Interpersonal, Self-identity, Morals, Needs, Values, Spiritual) (Gardner, 2006; Wilber, 2007).

3. Education to facilitate *concrete actions*: Technical and Training orientation, also called *Hard or Action Skills* (Aldrich, 2005). This kind of learning is also important for human development purposes, especially in relation to certain Lines of Intelligence such as Talents (e.g., Music, Math, Kinesthetic, Spacial), besides being closely related to various action-oriented and practical manifestations of most Lines of Intelligence. According to Shaffer's concept of "Situated Understanding" (2005); Flanagan's (2005) "Reflective Practice"; and Torbert's (2004) "Action-Inquiry", education and development can occur more effectively if balanced into a continuous framework of practices involving a loop between action and reflection, covering the gap between theory/abstraction and practice/experience.

Video Games and Human Development

On the other hand, video games are still falling short of promoting a deeper and broader kind of human development as proposed by this paper. By using multiple methodologies in my research, I observed a clear "gap" in relation to significant discussions and initiatives being explored in the area of:

4. Education to facilitate *overall human development*: Transformative and integrative orientation. This kind of education is closely related to the soft skills involved in *learning processes*, although it also embraces *acquisition of information* and *concrete actions*.

However, what makes it distinct from the others is the focus on the individual as an integrated, holistic, and multi-dimensional whole. In other words, the focus of this developmental education is on the overall "Self" (Wilber, 2000) or "self-center of gravity" of the player; the subjective place where their beliefs, worldviews, perspectives, and values tend to gravitate most of the time based on his or her developmental (psychological) stage. In terms of

Integral Theory (Wilber, 2007), it will be necessary for video games to promote a skillful and timely balance of awareness, support and challenge in order to catalyze integration, growth and transformation of five fundamental, co-dependent, and non-exclusive aspects of players' reality:

(1) Lines of Intelligence: Multiple and often interdependent lines of growth in the Self, corresponding to different skills, traits and aptitudes (see diagrams on Appendices C, F).

(2) Levels of Development*:* Development related to Horizontal and Vertical types of growth[8] (pre-conventional, conventional, post-conventional and integrative) in various lines of intelligence, both in individual and collective video game applications, the latter represented by collective development (groups, cultures) through multi-player and MMO applications (See diagrams on Appendices C, D, E, F).

(3) States of Consciousness: Inner states, moods and emotional tones, including training positive, healthy & growth-inducing states of consciousness such as flow, openness, relaxation, creativity, etc. (State-stage training, Wilber, 2007) (See diagrams on Appendices C, F).

(4) Types of Personality: *Gender* (masculine vs. feminine; yin vs. yang); *Styles* (aggressive vs. passive; individualistic vs. communitarian; leader vs. follower; thinker vs. feeler); and *Personality types* (Enneagram, Myers-Briggs) (See diagrams on Appendix F).

(5) Four Dimensions or Quadrants, which are composed by four interdependent and co-existent perspectives or realities corresponding to: (5a) *Subjective* (psychological, cognitive, emotional, intellectual, spiritual); (5b) *Inter-subjective* (relationships, worldviews, shared beliefs, cultures and sub-cultures); (5c) *Objective* (physical body, behaviors); and (5d) *Inter-objective* (systemic, social, economical, institutional, and educational) aspects (See diagrams on Appendices C, F).

So, the *fourth type of education related to human development* - or what I am referring as "integral-developmental education" - takes in account all of these five main aspects (Wilber,

[8] See definitions of Vertical and Horizontal development on page 11.

2007) and manages to catalyze awareness, integration and growth within and among all of them within an individual Self. Due to the scope of my paper, I will focus more on the (1) Lines of Intelligence and (2) Levels of Development, although I will eventually tap into the other three aspects (States, Types and Quadrants), which also carry similar importance and relevance.

Developmental Backgrounds and Definitions

Before continuing my exploration on this topic, and in order to facilitate a better understanding of my proposal, I will present a series of definitions and backgrounds related to human development (both individual and collective) based on research from contemporary developmental an integral psychology theorists (see page 4).

Definitions of Human Development

To begin, it is important to note that there are basically two different definitions of personal growth explored in this paper, both of them fundamentally important and complementary from the perspective of designing video games to catalyze human development:

- Horizontal Growth – Personal growth that occurs within a specific Level (or stage) of human Development*: Integration, translation, mastering of knowledge and skills, including transfer of learning from previous levels, as well as into the "real world"*. It can be also associated with Lines, Types, States and Quadrants.
- Vertical Growth – Personal growth that occurs through consecutive higher Levels (or stages) of human development (Wilber, 2007): *Deep transformation, change of inner paradigms, beliefs and worldviews, including qualitative increase of complexity, knowledge and skills into higher levels*. It can be also associated with Lines, Types, States and Quadrants (see page 10).

Interestingly enough, these two natural developmental definitions can be applied to describe similar types of growth players can have by moving *within and through levels* while playing specific video games, since they correspond to similar developmental languages. This fact highlights some common patterns related to the process of growth in both "real" and "virtual" worlds. Based on the proposal of Epistemic Games (Shaffer, 2005; Shaffer, Squire, Halverson & Gee, 2005), I believe that video games can be efficiently designed to facilitate transference of skills both from virtual to real life, and vice-versa. This topic also relates to the importance of designing video games based on their own intrinsic mechanics, structure and language, instead of only borrowing or importing design concepts from other media.

Both Horizontal and Vertical types of growth occur within multiple Lines of intelligence (Wilber, 2007; Gardner, 2006) (e.g., Cognitive, Emotional, Moral, Values, Interpersonal, Kinesthetic, Needs, Spiritual). In terms of human development, Wilber (personal communications, 2008) divide these lines in three basic groups: *Cognitive line, Self-related lines* and *Talents (or gifts) lines* (more details in the next pages). According to developmental studies (Marquis, 2008; Wilber, 2007; Zeitler, 2007), the Cognitive line is necessary but not fundamental for further development in all the other Lines of intelligence. This inter-dependence is also true for other specific lines. For example, in order to further develop their Moral line (which is related to human values), individuals often need to have their Interpersonal line developed as grounding foundation, and so on… It is also suggested by some developmental researchers (Esbjörn-Hargens, personal communications, 2008) that the Moral line corresponds very closely to the Self-Identity line, which is currently used to access people's overall "Level of Development" (Kegan, 1994; Cook-Greuter, 2006). The Moral line depends on growth in both Interpersonal and Cognitive lines (and which is often less developed than them) hence relates to

the "self-center of gravity" of a person's average level of inner development. At the moment, many kinds of developmental assessments such as the *Integral Psychograph*[9] have been explored in both academic and clinical fields to access and measure various lines of intelligence and their interdependent dynamics, bringing significant richness and granularity to the empirical aspects of developmental psychology assessments and applications. Based on that, I consider that the Integral Psychograph could also be an important complement to Flanagan's (2005) *Values at Play* investigation, as well as to facilitate the inquiry related to specific assessments investigated by Shaffer (2005) in the *Epistemic Games*.

According to Harvard professor Robert Kegan (1994) – who is also a consultant of adult learning and development – *vertical growth* (Levels) in any Line of intelligence has a basic fundamental pattern or "law", present in the findings of most contemporary developmental researchers. It basically occurs when one or more aspects of an individual's life - e.g., personal, interpersonal, cultural, social, practical, material or spiritual – with which one is *subject to total identification* with (or attachment to) in a specific stage of inner development, becomes only an *object* when experienced from a higher emerging identification stage. This gradual non-attachment and non-identification allows a person to "transcend and include" their previous, exclusive identifications and unconscious attachments, being more able to increase their level of control and free will over them, as well as to access a more complex, systemic, broader and deeper spectrum of perspectives and choices with regards to themselves and their lives. As a result, one will experience an increase of awareness, skills, care and responsibility, with a better *ability* to proactively *respond* and adapt to inner and outer situations instead of reactively

[9] "The theoretical concept of the Psychograph was developed by Wilber (2007) as a result of comparing various psychometric test results that measure qualities over time in an individual. In addition to the Psychograph documenting psychometric test results, individuals can also use this as a tool for self-assessment" (Esbjörn-Hargens, 2008, ¶1). See diagrams on Appendix C.

neglect, oppose or passively adapt to them. Some aspects of these *meta-view developmental concepts* have been also partially explored by various video game authors, especially in terms of the *learning processes* and *soft-skills* (Cognitive, Emotional and Interpersonal intelligences) (e.g., Gee, 2007; Bogost, 2007; Quinn, 2005; Flanagan, 2005; Shaffer, 2005; and Aldrich, 2003).

It is also important to consider that according to Suzanne Cook-Greuter (1999) – a developmental researcher from Harvard, author and developer of the *Integral Sentence Completion Test* (iSCT), considered the most rigorously developed, Harvard-tested, unbiased and reliable instrument for measure of developmental levels in the Self-Identity line available today[10]:

> Most growth in adults is of the horizontal, expansion kind. People learn new skills, new methods, even new ways of organizing knowledge, but their current [level of inner development] or mental model of the world remains the same …. Human development in general can be looked at as a progression of different ways of making sense of reality of different [levels of inner development]." (p.2 & 3)

This vertical progression of levels of inner growth tend to follow a continuous pattern of integration, differentiation, and re-integration into higher levels of maturity and complexity, where reality can be perceived and acted upon in quite different ways through expansive Horizontal types of growth (translation, mastery of skills, and paradigm integration). These basic developmental concepts compose the theoretical and practical backbone of my study.

[10] The iSCT is an expanded version of the Sentence Completion test created by the developmental psychologist Jane Loevinger (1976).

When Inner Growth Becomes Unhealthy

It is also important to know that both Horizontal and Vertical growth related to human development can (and often will) be accompanied by all types of dissociation, unbalances, "shadows", distortions, and misuses. This psychological phenomenon can be related to the extensive discussion about the potentially negative aspects of video games, and what could be behind the controversy about their healthy or unhealthy influence on different kinds of players. Due to issues of space and scope, I did not investigate in depth this significant subject (which has been extensively explored by the field), since my primary concern was to focus on the main topic of this paper, exploring video games' healthy, positive, and proactive potentials for inner growth.

However, it is worth making a few main references about this issue, since it is also closely related to my proposal. According to Integral Psychology (Wilber, 2007, 2000) and most developmental psychologists, human beings do not grow in a clearly sequential and linear order. Some aspects of the Self, especially corresponding to the multiple Lines of intelligence present in every person, tend to develop earlier, later, less or more than the others. In this way, it is quite common to have different Lines of intelligence "naturally" showing uneven Levels of development. Nevertheless, unbalanced development when raised into critical levels within certain Lines of intelligence (e.g., high cognitive intelligence allied with too low interpersonal, values, or moral skills) *may have significant contribution in terms of increasing or even promoting some of those potentially negative aspects of video games*, in addition to their content, themes, and genres. Developmental research about the tragic combination of a disintegrated or low "self-center of gravity" (corresponding to the Moral and Values lines), plus critical unbalances in the three other main developmental aspects described previously (States, Types and Quadrants) could add significant (and discriminative) data to complement existing academic

studies about negative influences of video games - such as contemporary research related to cognitive, cultural, and social behaviors, as well as other objective and empirical factors (e.g., gameplay dynamics and intrinsic mechanics of games).

It is also important to note that the main purpose of human developmental research and applications is *not* to support people (or players) to grow all these Lines of intelligence in order to become like "super man" or "superwomen." The underlying purpose is to access people's strengths and weaknesses, potentials and learning edges, in order to provide a mix of awareness, support and challenge to improve what is already strong in their own constitutions and personalities, and to *at least* improve what is weak or "under the average" into higher levels that do not compromise their wellbeing and healthy functioning in life.

Moreover, although overall human development naturally implies an increase in health from an holistic standpoint (mind, body, heart, spirit), there can be several unhealthy and unbalanced aspects present in any Level of development, as well as in the other four fundamental aspects discussed previously (see page 10).

Bringing this concept into video game design, it is my intention to explore different ways to incorporate (as much as possible) initial or continuous "on the go" personal assessments in relation to those five main developmental aspects. That would include strategic customization and continuous re-adaptation of video games' content and practices, according to various personal assessments of players and to their process of growth while playing those video games; following a continuous feedback loop of developmental learning and adaptations (Esbjörn-Hargens, 2008; Wilber, 2007) based on players' continuous gameplay actions and performance (Shaffer, 2005; Shaffer, Squire, Halverson & Gee, 2005).

In general, human developmental practices often imply the need of engaging in some kind of integrative and self-inquiry inner work. In terms of psychological growth, that can include a myriad of psychological techniques such as *behavioral*, *cognitive*, *analytical, existential, reflective inquiry and shadow work* practices. In terms of spiritual awareness and growth, that can include various spiritual practices such as *State-Stage training* (Wilber, 2007)*, mindfulness, meditation, breathing, body techniques, and soul retrieval*. In my opinion, many of these techniques can be implemented into the structural design of video games by promoting an exquisite balance of action and reflective inquiry (Torbert, 2004) experiences throughout the gameplay, depending on different consoles, interfaces, and genres. According to Integral Psychology (Wilber, 2000), Integral Life Practice (Wilber, 2007) (see pages 19-20) and the Integral Play framework (Gordon & Esbjörn-Hargens, 2007) (see page 21), working (or playing) with those techniques and practices can be strong catalyzers of *Horizontal* and *Vertical growth*. In my view, video games have the potential to be one of the best and most powerful instruments to deliver customized developmental applications in skillful and persuasive ways.

Video Games, Education, and Human Development: Further Explorations

Based on those developmental definitions, I am now taking further the exploration about the *four types of learning* introduced in the previous section (see pages 8-9). Based on my own personal exploration, interviews, analysis and accounts from various video game scholars, critics and designers (see page 8), I came to the conclusion that these four educational categories can have significant potentials to catalyze different kinds of personal growth, either directly (purposefully designed) or indirectly (non-purposefully designed or collateral). I envision that video games can provide very powerful ways to develop different Lines of intelligence (Wilber,

2007), including a healthier and more balanced integration among those lines and increase in the "self-center of gravity" of players (Levels), which are some of the main factors involved in promoting various kinds of human development[11]. It is also important to note that different kinds of players would be attracted to distinct video game consoles, genres and themes. This is true not only due to their (1) *Lines of intelligence*, but also due to the other *four main complementary aspects related to overall human development*: (2) Levels of inner development; (3) inclinations or resistances related to various States of consciousness; (4) different Types of personality and psychological traits; and (5) inclinations or resistances in relation to different existential realities and perspectives (Quadrants) (see page 10).

Video Games' Partial Contribution to Human Development

In my mixed-methods research - which included studying, observing, and playing a series of video games from various genres - I observed that human development in terms of growth within and among these various Lines of intelligence tends to happen in quite random, indirect, limited, collateral, specific, and/or fragmented ways (more on page 22). The same tends to be true in relation to the assessment, adaptation, and integration of the other four complementary development aspects: Levels, States, Types, and Quadrants.

This fragmentation is a normal and expected phenomenon. For sure the video game

[11] For example, by improving the (1) *Acquisition of information* and (2) *Learning processes*, video games can catalyze inner growth through various Lines of Intelligence (Wilber, 2007; Gardner, 1985) such as the *Cognitive line* (Piaget, 1962), and other *Self-Related lines* (Wilber, 2007): Interpersonal (Selman, 2007); Emotional (Kegan, 1994; Goleman, 2006); Psychosocial (Erikson, 1950); Moral (Kohlberg, 1984; Gilligan, 1982); Needs (Maslow, 1973); and Values (Graves, 2004; Beck & Cowan, 1998). Similarly, by training for improvement in (3) *Concrete actions*, video games can promote growth in multiple *Talents (or gifts) lines* of intelligence (Wilber, 2007), such as Kinesthetic, Musical, Spacial, Artistic, Mathematical, and Linguistic. (Gardner, 2006), as well as help players to embody practical and action-oriented learning in most of the lines. Finally, by facilitating (4) *Overall human development*, video games can help to integrate and catalyze development in all the lines described above, plus specific *Self-Related lines* such as Spiritual (Wilber, 2007) and Faith (Fowler, 1981), including promoting broader and deeper focus in the *Self-Identity line* (Loevinger, 1976; Cook-Greuter, 2005), which basically correspond to the average Self-Center of Gravity of players (Wilber, 2007, 2000).

industry and designers are not to blame, due to the simple reason that *these video games were just not designed to do so in the first place!* As a new industry still in process of shaping and maturation, only recently video games have been explored to provide extra benefits beyond entertainment, which have been possible today especially due to significant technological breakthroughs. Today, more than ever, they can be especially prone to incorporation of a series of developmental practices.

Due to this fact, *I realized the fundamental importance of categorizing and embracing those five main developmental categories into a more integrated and complementary video game design approach*. This *Integral Approach to Video Game Design* contains a theoretical and practical methodological framework that can provide a clearer, deeper and more comprehensive exploration of those different perspectives and their complementary relationship to the overall process of human development and optimal health – resulting in more focused, effective, and meaningful design applications (a summary of this Integral Approach to Video Game Design is presented in the Appendix A).

Developmental Cross-Training

Based on this approach, parents, gamers, coaches, counselors, teachers, and institutions would have a clearer and better sense of "how to" and "when to" use these developmentally designed video games for their various developmental, educational, and healing purposes and aspirations. As an illustration of how these concepts can be strategically used, take the Lines of intelligence for example. According to Ken Wilber (2007), George Leonard & Michael Murphy (2005), to the extent that we engage in some kind of "cross-training" program for human development that can cover some of our main Lines of intelligence, more will be the chances that

growth in one or more lines start to literally "push" and catalyze development and optimal health in the others. Based on the emergent concept of Integral Life Practice (ILP) (Wilber, Patten, Leonard & Morelli, 2008) - composed by an "Ultimate Body, Mind, Spirit Cross-Training" designed to facilitate healthier, fuller and more integrated processes of human development - it is also one of my intentions to integrate as much as possible some core developmental modules of ILP into the structural design of those new video games (See diagram on Appendix G). These modules are composed by interdependent and complementary practices related to Body (physical, kinesthetic), Mind (intellect and emotions), Spirit (existential and spiritual), and "Shadow" (unconscious or repressed psychological aspects[12]) (Wilber, 2000; Jung, 1989) - besides other auxiliary modules (ethics, sex, work, emotions, relationships).

In my view, some of these modules can be skillfully and subtly (Trojan Horse approach) incorporated in the design of a specific and massive "cross-training" video game, or divided into several game titles, expansion packs, modules or levels within a complete developmental package, which would also include different interfaces (mouse, biofeedback, movement recognition, and other devices). As a result, these video games will be able to provide customized but subliminal Integral *Virtual* Life Practices to players that otherwise would not have interest, knowledge or "time" to engage in such developmental activities. Moreover, they will be also capable to support the developmental practices of players interested in exercise some aspects of themselves that would be either more difficult, time consuming or risky to explore in their "real lives"; both in solo or in group. By providing that, video games can allow players to naturally access and train developmental capacities through the sheer and transformative experience of "play"…

[12] See more details on the relationships between shadows, human development and video games on page 15.

Integral Play Framework

In a journal article titled *Integral Play: An Exploration of the Playground and the Evolution of the Player* (AQAL, 2007), Gwen Gordon, M.A. and Sean Esbjörn-Hargens, Ph.D, explore the role that play has in the process of human development, based on research on play from Sutton-Smith (2003) and others. Gwen Gordon is an educational designer, coach and pioneer researcher in the field of transpersonal play. Sean Esbjörn-Hargens is an integral scholar-practitioner, author and my mentor in the mixed-methods research. One of the core elements of their theory is the exploration of "how play is not only an epiphenomenon but also an instigator of transformation" (p. 62). In their words: "as the player evolves, facets of the self which were once suppressed, unconscious or latent blossom into play, increasingly integrating the whole self and the whole world" (p.84). This is one of the most particular (and fundamental) developmental concepts that I believe could be feasibly designed into video games geared towards facilitating human development. According to this framework, the experience of play can - from an integral perspective - not only embrace but strongly support the continuous growth of various "Play Selves." These Play Selves correspond to consecutive and embracing levels of inner development ranging from pre-personal (pre-rational), to personal (rational), to post-personal (post-rational), to transpersonal (or spiritual) stages of inner development (See diagrams on Appendix F). In summary, Gordon & Esbjörn-Hargens (2007) Integral Play framework offers a thorough and well founded developmental model of play, which can be used to facilitate inner integration and transition among childhood, adolescence and adulthood, as well as to facilitate further integration and transformation throughout later adulthood stages (i.e., beyond the conventional adulthood stage covered by Piaget), a subject rarely explored in conventional

human development theories (Cook-Greuter, 2006). In my view, this is a timely and quite welcomed change, especially given the fact that the average age of gamer today is 33-years old[13], an age especially prone to benefit from such developmental applications.

Fragmentation and Lack of Developmental Focus in Current Video Games

Back to what I referred as the *random, collateral, limited, specific,* and *fragmented* developmental aspects provided by video games today, take the Self-identity line for example, which is connected to Morals and Values aptitudes, and has one of the most fundamental roles in human development. Although open-ended role playing video games such as *World of War Craft (WOW)* and *Second Life* can provide a myriad of opportunities for playing with different identities, there is still no specific structural design to use these tools and practices to promote a clear and grounded path to facilitate overall inner development according to some of the basic axioms of integral-developmental psychology (see pages 10-17).

The players of these games can play with different identities at random for all eternity in an infinite virtual "flatland" (Wilber, 2007), and yet that would not necessarily promote or be sufficient to develop more awareness about who they really are in terms of their overall Self and "self-center of gravity", and who they could possible become in terms of growing further, moving towards optimal health, and manifesting their inner potentials in "real life" (transfer of skills, self-integration and self-improvement). In other words, there is no clear structure or underlying direction of "what to do" or "how to do" in terms of knowing more about yourself and exercising where you can (or need) to growth in order to have a more fulfilling, healthy and

[13] According to the Entertainment Software Association's *2007 Sales, Demographics and Usage Data: Essential Facts about the Computer and Video Game Industry*: 28.2% of players in the US are under 18 years, 47.6% between 18 and 49, and 24.2% over the age of 50. In terms of parenting, "the average age of a gamer parent is 40 years old" (p.8).

integrated life besides the reality of the gameplay. Moreover, there is no clear path of how can you transfer into "real life" whatever knowledge or insights you may have by playing with those virtual self-identities. For sure some bright and creative players can still create specific situations and take important learning and insights about their self-identity by playing these video games (Gee, 2007; Bogost, 2007; Shaffer, 2005), but in my view this often involves a much greater exercise of imagination and "chance" than if these video games were purposefully designed to use these educational aspects and insights to provide a clearer and more scientifically grounded set of paths and directions towards promoting overall inner growth, aimed to different Levels of development Lines of intelligence, Types of players, etc.

Some role playing games, such as the ones explored by research on *Epistemic Games* (Shaffer, 2005) (*Madison 2200, Full Spectrum Warrior*) and *Values at Play* (Flanagan, 2005) (*Rapunsel*) can and do provide clear, feasible and significant support and directions towards transference of skills between virtual and real worlds, although they tend to be quite specific and generally relate to professional, behavioral or social developmental goals and intentions.

The same trend also applies in terms of the very few video games related to spirituality, which I consider to be still not tapping into the broader and deeper possibilities of spiritual growth that video games could actually provide, based on Integral Spirituality definitions (Wilber, 2007) (see page 3). The specific video game which I (and others from my research) consider as being the most "spiritual" [14] from the point of view of State-training is *The Journey of the Wild Divine*, a video game based on biofeedback techniques that is actually a hybrid between a video game and a stress release tool. By offering meditative and breathing practices

[14] Another interesting upcoming spiritual game is *The Night Journey*, which is being developed by the educator, author and designer Tracy Fullerton, the artist Bill Viola, and a team from the USC Game Innovation. Being a hybrid between a video game and contemporary art form, it seems to go a step further in terms of providing a deeper level of spiritual meaning and experiences, since it intends "to explore the universal story of an individual mystic's journey towards enlightenment" (Fullerton, 2008).

and an aesthetically pleasant virtual environment, players can tap into some altered states and use the game for State-training and relaxation. This is certainly a good and unprecedented move towards creating a more spiritualized video game, but it still falls short of promoting a more grounded and broader kind of spiritual development. Again, there is no clear direction of "what to do" or "how to do" in terms of making use of these State-training exercises in order to promote a more significant and deeper kind of spiritual growth, which would include gradual and steady stabilization of those states (State-Stage training) (Wilber, 2007), the gradual development of an inner witness or self-observer, and also reaching a deeper realization about what is of the ultimate concern in relation to life, to our own selves, and to other beings.

Some games such as *Jade Empire, Mass Effect, Bioshock, Deus-Ex* and *Star Wars: Knights of the Old Republic* provide stories that include moral and developmental messages up to a certain extent, as well as other role playing (RPG), action-adventure and casual video games that often tap into some aspects of Self-identity and other Lines of intelligence. Even being deeper and more complex than most video games, they are still not tapping into the broader potentials that I envision for intentionally designed developmental video games, based on Integral Psychology and developmental research. There is much more that could be done if those messages and practices were more integrated and grounded in human development practices and techniques that could be more clearly and effectively transferred into the "real Self" and "real Life" of the players. If we manage to skillfully expand these already successful applications - both in terms of focus, depth, and quality - imagine how much better, more useful and popular this new generation of video games would turn out to be?

From a meta perspective, it is no surprise why some of these (and others) best-selling video games that incorporate a deeper quality of subjective and inter-subjective developmental

aspects have been recently considered "the best of the year" or creating a lot of buzz, such as: *World of War Craft* (sense of community and co-operation); *Bioshock* (highly aesthetic environments, rich subjectivity & morality dilemmas); *Mass Effect* (dialogues, emotional interactions, rich storytelling and highly aesthetic environments); *Portal* (multi-dimensional thinking and a rich subjective "touch" through skilful use of humor & AI interactions); *Second Life* (community, arts & freedom of expression); *The Sims Series* (community and social skills); *Rock Band and Guitar Hero III* (music and community); *Psychonaut* (exploration of subjective realities), *Braid* (subjective realities and reflective inquiry)*;* and Nintendo Wii console's games such as *Wii Sports and Wii Fit* (community, exergaming, and kinesthetic appeal). Also, the highly awaited *Spore* (developmental evolution of characters, worlds, and societies), and the new *Civilization IV* (evolution of societies and civilizations) are bringing into the mainstream some developmental concepts that could be significantly improved in terms of meaning if integrated with the subjective and inter-subjective developmental approaches discussed in this paper (see pages 5-6) – instead of being mostly based in external developmental realities and dynamics (e.g., behavioral, social, economical, institutional).

Likewise, some "non-best-selling" or institutional video games and simulators related to various issues such as social awareness, gender, culture, health, education, and training are gradually helping to push ahead this emergent personal developmental trend, such as: *Virtual U* and *Virtual Leader* (soft-skills, relational and managerial training) plus an increasing list of "self-help" casual games & training software (often cognitive-behavioral or kinesthetic) such as *Re-Mission* (self-responsibility and awareness), Ubisoft's *My Coach series*, *MindHabits*, *MindFit, My Happy Manner Book*, *DS Therapy*, *Female Power Emergency Up!,* and *Yoga Anywhere*; as well as some independent (Indie) games such as *Flow* (aesthetics and flow state), *Cloud*

(meditation & relaxation) and *Synaesthete* (music & aesthetics). In addition, emergent movements such as *Serious Games*, *Games for Change*, *Games for Health*, *Cybertherapy,* and *Meaningful Play* are creating history by carrying on this trend forward in a myriad of ways.

Even if most of these video games have been designed to cover specific goals, contexts, and issues - and hence not intentionally designed to promote overall human development and optimal health in the fundamental (underlying) or meta sense as proposed by this paper - they have been tapping into extremely unexplored "gaps" related to a large popular interest and demand for more meaningful, healthy, useful, and subjectively rich entertainment experiences, ones where the players can relate to their video games and other players in more personal, embodied, subtle[15], and intimate ways. I consider these video games as being precursors of a new trend of video game design where subjective and inter-subjective developmental aspects will have an increasingly pivotal role in balance with objective and practical factors being extensively explored nowadays (e.g., technological, systemic, behavioral & action-oriented); where video games will be skillfully and scientifically designed according to various developmental purposes and integrated with all the technological, entertaining and marketable characteristics already present in the most successful video game titles. Borrowing on Quinn's (2005) quote, *human development* "can and should be hard fun!" - *and also more accessible in a mass scale…*

In the next pages of this section, I will briefly explore a series of further insights and associations between video games, education and human development, highlighting the most important intersections and applications based on research from gaming scholars and designers. *The intention here is to invite the reader to start envisioning and considering in realistic ways how these existing educational aspects and features can be integrated, transformed and expanded into promoting education towards facilitating human development.*

[15] Through new and upcoming biofeedback interfaces such as Wild Divine, NeuroSky and Emotiv.

Due to issues of space, I focus my discussion on a few significant representatives of the emerging field of video games, who in my understanding have covered many of the fundamental learning concepts related to gaming realities and research, which I relate to specific aspects explored by integral-developmental psychology.

The Video Game Content may not be as Important as We Think

According to the writer Steven Johnson in his best selling book *Everything Bad is Good for You* (2005) video games can improve various kinds of learning (especially cognition) in many collateral ways, independently of their own content. These insights are also shared by other video game designers (e.g., Gee, 2007, 2003; Bogost, 2007). Johnson (2005) states that there is an underlining "informal" education provided by the entertainment industry nowadays that it is not happening in formal educational institutions, but in entertainment related products such as video games. Although seemingly informal, these qualities may be much more important in terms of personal and professional growth than the ones people have been taught through formal learning. In my view, these skills are closely related to some of the core *Soft skills* (Aldrich, 2005) and *Self-Related Lines* of intelligence (Wilber, personal communications, 2008) necessary to promote overall human development, as explored in the research of most developmental psychologists (see page 4).

Video Games and Cognitive Skills

In addition to these intrinsic collateral educational effects of video games that can occur independently of content, there are also several fundamental connections between video games and learning in relation to different genres, contents, and themes - especially in role-playing

games (RPG) and Massive Multi-player Online games (MMO). In his book *What Video Games have to Teach Us About Learning and Literacy: Revised and Updated Edition* (2007), James Paul Gee – a professor of Arizona State University and a renowned educator in the US – explores contemporary theories of cognitive development related to people's sense of identity, meaning-making, critical thinking, evaluation, perception, and decision-making. As a result of his personal, practical and academic explorations, Gee (2007) identified *thirty-six core learning principles* that are "built into good video games, principles strongly supported by current research on human learning in cognitive science" (p.3, 2003). Some of these core principles associated with developmental insights are discussed below.

According to Gee (2007), one of the underlining reasons of such powerful capacities lies in the effective ways that video games interface learning and identity, such as in role-playing games. Based on these concepts, it turns to be easier to grasp the validity of the main purposes of my research topic, since human development have a lot to do with integrating, playing with, developing, and transforming self-identities (corresponding to different Lines of intelligence, Levels, Types, States and Quadrants, as discussed in pages 10-16) in various kinds of cultural and social contexts. In resonance with other designers (Quinn, 2005; Bogost, 2007), Gee (2007) also comments about the "highly meta-reflective" attitude of some players in relation to the video games they play, where they are not only satisfied by playing these games according to their own structures and meaning-making systems, but also look at games like *Civilization* "as a space that can be explored and 'played with'" (p.188) - or, in terms of Epistemic Games (Shaffer, 2005), looking at the games as vehicles for appropriating different epistemic frames. Another clear example of the application of these meta-reflective capacities are the "mods" or fan modifications which allows video game players to built new situations and extensions to the

existing games, or even totally new games. These gaming concepts deeply resonate with the fundamental developmental idea of "a subject of one stage becoming the object of the subject of the next stage" - a meta-reflective capacity naturally exercised in the process of developmental transformation identified by Kegan (1994) (see page 13), Wilber (2008) and most developmental psychologists. Although out of the scope of this research, I question if video games could be already providing a much solid groundwork for facilitating human development than currently perceived and acknowledged, by "pushing ahead" these cognitive processes in very young ages. According to Wilber (2007), the Cognitve line also represents the capacity to "be aware of" and make sense of any given phenomena, as well as to be able to "shift perspectives" by putting ourselves in different "shoes," roles and situations.

Based on practical explorations, Gee (2007) claims that good video game designs tend to incorporate various universal and effective learning principles, though we have to be careful not to co-opt young people's cultures for our own purposes; and instead invite video game players to be "full and productive partners" (p.214). The same can be applied in the case of promoting human development, due to the fact that developmental messages an practices would not work effectively if exercised or "facilitated" from a "top-down", "forced upon" or preaching approach[16]. Instead, I propose that they can work more effectively if exercised from a 'Trojan Horse" (subtle, underlying, surreptitious) approach to game design. This developmental concept related to the importance of using skillful means of communication is also in great resonance with other developmental insights related to the significance of being able to take the perspective of others (actually a fundamental cognitive skill that grounds all other lines of development), as

[16] This open ended approach to design was also shared by some socially responsible lead game designers at the Game Developers Conference (GDC) 2008 - such as Ken Levine (*Bioshock, 2K*), Peter Molineaux (*Fable, Lionhead Studios*), Louis Castle (*Command & Conquer, Electronic Arts*), Chris Taylor (*Total Annihilation, Gas Powdered Games*), and Daniel Erickson (*Upcoming MMO game, Bioware*).

well as *providing messages that could be interpreted and acted upon differently by people from various stages of inner growth.*

Video Games, Individual & Social Transformation, and Transference of Skills

In his book *Persuasive Games* (2007), Ian Bogost - professor of the Georgia Institute of Technology, author and designer - focuses on three main social systems: *Politics, Advertising and Education*, suggesting that exploration of these three fields in relation to video games could "plant the seeds for the interrogation of other, perhaps more subtle expressive domains" (p.64). According to him, "these three areas cover a broad swath of human social experiences, areas that have become largely broken in contemporary culture, and areas I believe video games can help restore, and not just in a small part" (p. 64). I definitely resonate with those ideas, and suggest that bringing the "more subtle expressive domain" of *human development* could highly support the growth and full manifestation of those "seeds," mentioned by Bogost (2007) in unprecedented and proactive ways. When commenting about the use of "videogames to support cultural and social positions" (p. ix), Bogost (2007) claims that video games also have the potential to deliver much deeper, transformative and even revolutionary messages. In his words: "In addition to becoming instrumental tools for institutional goals, video games can also disrupt and change fundamental attitudes and beliefs about the world, leading to potentially significant long-term social change" (p.ix). These critical thinking skills are also explored by the Epistemic Games (Shaffer, 2005), which advocates the use of games for both initiation and transformation, going beyond old dynamics of "schooling". These insights tap into a fundamental developmental issue rarely explored in the video games, which involves the importance of promoting Vertical growth (paradigm shifts) and not only Horizontal growth (translation, mastering of skills) in

terms of individual, cultural and social development (Quadrants or dimensions of reality, see page 10).

Bogost (2007) is also interested in exploring "video games that make arguments about the way systems work in the material world, [striving] to alter of affect the player opinion outside of the game, not merely to cause him to continue playing" (p.47), with critical thinking skills being transferred "from the game world to the material world" (p.47). Based on existing educational research (Gee, 2007; Aldrich 2006; Bogost, 2007; Shaffer, 2005) and integral-developmental psychology findings, I believe that the natural transference of developmental skills that tends to occur among different levels of complexity either within video games or in terms of psychological development, can also occur in relation to skills exercised within the *virtual world* of video games into the *real world* of daily life.

Video Games and the Four Basic Dimensions of Life

Some of Gee's (2007) views concerning video games and learning are also in great resonance with one of the five core developmental aspects explored by Wilber (2007) in terms *Quadrants* (see page 10), the *four basic, irreducible, co-existing and complementary dimensions of reality*. The passage below illustrates Gee's views:

> So far I have talked about video games in terms of individuals playing games alone, because I wanted to concentrate on learning principles that primarily had to do with the individual mind and body as it confronts the world of experience. Nonetheless, I have argued that learning, even in these individualistic terms, is very much a matter of being situated in *material, social, and cultural world* [italics by author]. (Gee, 2008, p. 180)

The inclusion of these four basic dimensions of player's lives is a fundamental aspect of designing video games to catalyze human developmental, since they are all part of overall contextual background and daily reality of video game players. Ideally, a player would need to "touch bases" with basic aspects of all those four perspectives and dimensions, experiencing different kinds of growth and integration both within each dimension and among all them, since their intrinsic interdependence and complementarities.

The same dynamics can also apply to video game design, where individual, collective, behavioral, cultural, social and institutional worldviews and values often (and ideally) need to be taken in simultaneous consideration. Flanagan's (2005) *Rapunsel* project provides a proactive example of managing this difficult and multi-disciplinary task, by balancing objective goals with subjective and cultural aspects related to inner values of users, designers, and multiple stakeholders - as well as covering aesthetical, subjective, behavioral, cultural, systemic, and technical aspects of the game.

Video Games, Values, Morals, and Spiritual Meaning

Flanagan's (2005) *Rapunsel* project is also a good example of how values could be discovered, analyzed and integrated, a fundamental issue related to my proposal of developmental video games from the perspective of players and game designers. Since values are closely related to the Moral line - which basically correspond to the developmental "self-center of gravity" of different kinds of players coming from various individual, cultural and social backgrounds – it is easy to infer the significance of working with assessing and integrating values towards promoting overall human development and optimal health (body, mind, heart & spirit).

Shaffer, Squire, Halverson & Gee (2005) and Bogost (2007) also discuss about specific aspects that can be related to the ontological, existential, and spiritual aspect of my research, when they explore the difference of being *schooled* (e.g., becoming an expert and adapting to current systems) and *educated* (e.g., learning how to exercise critical thinking and "understanding how to disrupt a system with new improvements") (Bogost, 2007, p.263). These educational meta-views are in unison with both the horizontal and vertical processes of human development related to our own selves and how we live and function in the world (Kegan, 1994). Commenting about the subjects of religion and spirituality, Bogost (2008) shares an intriguing (and inviting) thought: "This subject remains an open territory for video games of the future" (p.292). In a way, I see my developmental research as being an example of this pioneering exploration into the unknown and exciting territory of existentially meaningful video games.

Conclusion

We live in an auspicious moment of great technological, aesthetical, and developmental opportunities represented by the recent advances of the video game industry, as well as the fields of Integral and Developmental Psychology. Video games today have the potential to incorporate a series of unprecedented and powerful developmental tools by *providing highly engaging and joyfully interactive experiences related to "real tim*e" *and "hands on" learning designed to catalyze human development.* Eventually, these experiences may be transferred into real situations and experiences in the "real world", and vice-versa (Integral Life Practice).

As a result, these new video games will be not only aimed to individuals and communities of players, but also geared assist the job of coaches, mentors, teachers, organizations and institutions to convey their various educational, developmental, and

meaningful messages. Adding to the potentials of Massive Multi-player Online video games (MMO), the evolution of these developmental applications could spread into exponential waves of massive individual and collective transformation maybe never accomplished by any kind of media in history. Ideally, these developmental tools would be totally embedded in their design (Trojan horse approach), and hence not being patronizing, forceful, literal or apparent. This trend could revolutionize how video games have been seen, looked after, and purchased nowadays, potentially increasing their appeal, popularity, and demand in unprecedented exponential ways.

We are now in a great, timely and also critically needed position to start using all the multi-disciplinary systems we have been building around us in the last century in more proactive and constructive ways. We have in our hands the great possibility of exploring these emergent potentials through novel and creative video game applications, in order to create healthier, more proactive and meaningful entertainment experiences; and as a result of that, a better world for all of us to live, play and enjoy, in both *virtual* and *real* ways. As the old prophet Hillel used to say, *"if not now, when?"* - which I add: "*If not us, who?"*

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Appendix A

Summary of the Fundamental Design Concepts to Catalyze Human Development

Integral Approach to Video Game Design

Based on current educational and developmental research on video games - *Integral Psychology*, *Integral Life Practice* (Wilber, 2007) and *Integral Play* (Gordon & Esbjörn-Hargens, 2007) - in order to promote a more comprehensive and effective design framework, video games will need to purposefully take into account a series of aspects related to scientifically observed dynamics of human development (Wilber, 2000; Kegan, 1994). Some of these main aspects are:

1. Continuous exploration and improvement of alternative video game designs incorporating new technological interfaces – e.g.: Biofeedback (Wild Divine, Emotiv), upcoming 3D interfaces (Apple), and customized tools and practices related to human development based on developmental and integral psychology frameworks. These improvements will be allied with empirical tests and observations of different educational and developmental types of learning through various current and new video game research and applications.

2. In terms of Integral Psychology (Wilber, 2007, 2000), it will be necessary for video games to provide a skillful and timely balance of awareness, support and challenge to players in order to facilitate inner integration, growth and transformation of *five fundamental aspects* related to their overall process of human development:

- *Levels of Development*, including psychological and spiritual growth in both Horizontal and Vertical types of development, as well as in individual and collective (multi-player and MMO) applications.
- *Lines of Multiple Intelligences* (Gardner, 2006), divided in Cognitive line, Self-Related Lines, and Talents line (Wilber, 2008); as well as cross-training between two or more *lines of intelligence* based on the Integral Life Practice (ILP) framework.
- *States of Consciousness*, including inner states of consciousness (Wilber, 2007), moods, and emotional tones. It would also include training positive, healthy and growth-inducing altered states of consciousness (e.g.: flow, joy, awe, love, relaxation, meditation, mindfulness, creativity, peek experiences).
- *Types or Styles*: *Genres* (masculine vs. feminine; yin vs. yang); *Styles* (aggressive vs. passive; individualistic vs. communitarian; leader vs. follower; thinker vs. feeler); and especially *Personality types* and traits (Enneagram, Myers-Briggs).

- *Quadrants or the four basic dimensions of reality*: *Subjective* (psychological, emotional, intellectual, spiritual); *Inter-subjective* (relationships, worldviews, cultures and sub-cultures); *Objective* (physical body, behaviors); and *Inter-objective* (systemic, social, economical, institutional, educational) aspects. Ideally, a player would need to "touch bases" with basic aspects of all those four dimensions, experiencing different kinds of growth and integration both within each dimension and among all them, since their intrinsic interdependence and complementarities.

3. Incorporation of initial or continuous "on the go" personal assessments based on the five main aspects of human development - e.g.: Personality types and styles (Enneagram, Myers-Briggs); Lines of Intelligence and Levels of Development (Spiral Dynamics, Sentence Completion Test, Psychograph, ILP); and States of consciousness (Biofeedback interfaces).

   Customization and continuous re-adaptation of video games according to these personal assessments and to player's inner development while playing those games, following a developmental "loop" of adaptation and learning (Esbjörn-Hargens, 2008; Wilber, 2007).

4. Maintenance and nurturance of the basic purposes of entertainment and economical profitability characteristic of successful video games, adding subtle and skilful strategies of incorporation of developmental messages and practices into the basic structure of these new video games (Trojan Horse concept).

5. Integration of some of the core developmental modules of Integral Life Practice (ILP) (Wilber, 2007) into the structural design of video games. These modules are composed by interdependent and complementary developmental and healing practices related to Body (physical, kinesthetic), Mind (intellect and emotions), Spirit (existential and spiritual), and "Shadow" (unconscious or repressed psychological aspects).

6. Design video games that can simultaneously (or specifically) adapt to different players, providing messages and practices that could be interpreted and acted upon differently by various Play Selves (Integral Play framework) (Gordon & Esbjörn-Hargens, 2007).

7. Design video games based on their own intrinsic mechanics, structure and language, instead of only borrowing or importing design concepts from other media.

8. Facilitate awareness, transference and applications of skills from "virtual" to "real" life, and vice-versa.

Appendix B

The mixed methods research included 6 different quantitative and qualitative methodologies, which were chosen with the purpose of bringing together the strengths of both quantitative and qualitative research in order to compare, validate, complement, and/or contrast quantitative results with qualitative findings. Follow below a list of the main methodologies - Phenomenology, Structuralism, Hermeneutics, Ethnomethodology, Empiricism and Systems Theory - and their respective areas of exploration.

- Phenomenological exploration of my subjective experiences of playing different kinds of video games, as well as autobiographical inquiry, journals and observations (See Appendix .
- Personality type self-explorations: Enneagram and Myers-Briggs to identify filters and patterns.
- Developmental assessments: Cook-Greuter's (2006) Integral Sentence Completion Test (iSCT).
- Interviews and discussions with a hardcore gamer and IT professional, two lead integral thinkers - Ken Wilber, David Zeitler - and a lead video game designer - Daniel Erickson from Bioware.
- Full 5-day Participant-Observer attendance at the Game Developers Conference (GDC 2008), which counted with +400 lectures, +16,000 participants, and +120 expositors.
- Empirical survey: Comparative analysis of 150 people from 3 different groups related to video games, human development, and people who interest covered both areas (www.integraleye.com).
- Extensive academic literature review and media research.
- Systems analysis: Educational systems related to video games, Integral Education, Integral Life Practice (Wilber, 2007) and Integral Play Theory (Gordon & Esbjörn-Hargens, 2007).

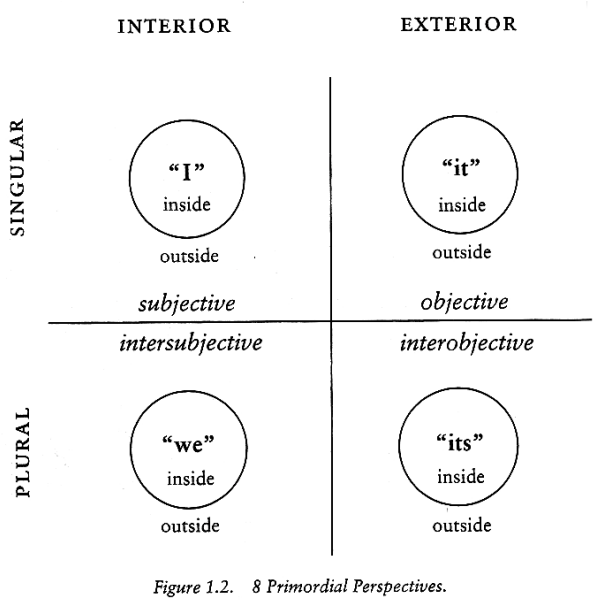


Figure 1.2. 8 Primordial Perspectives.

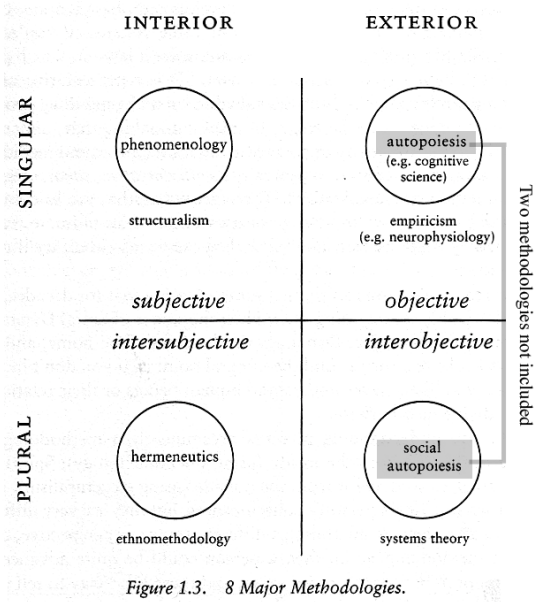
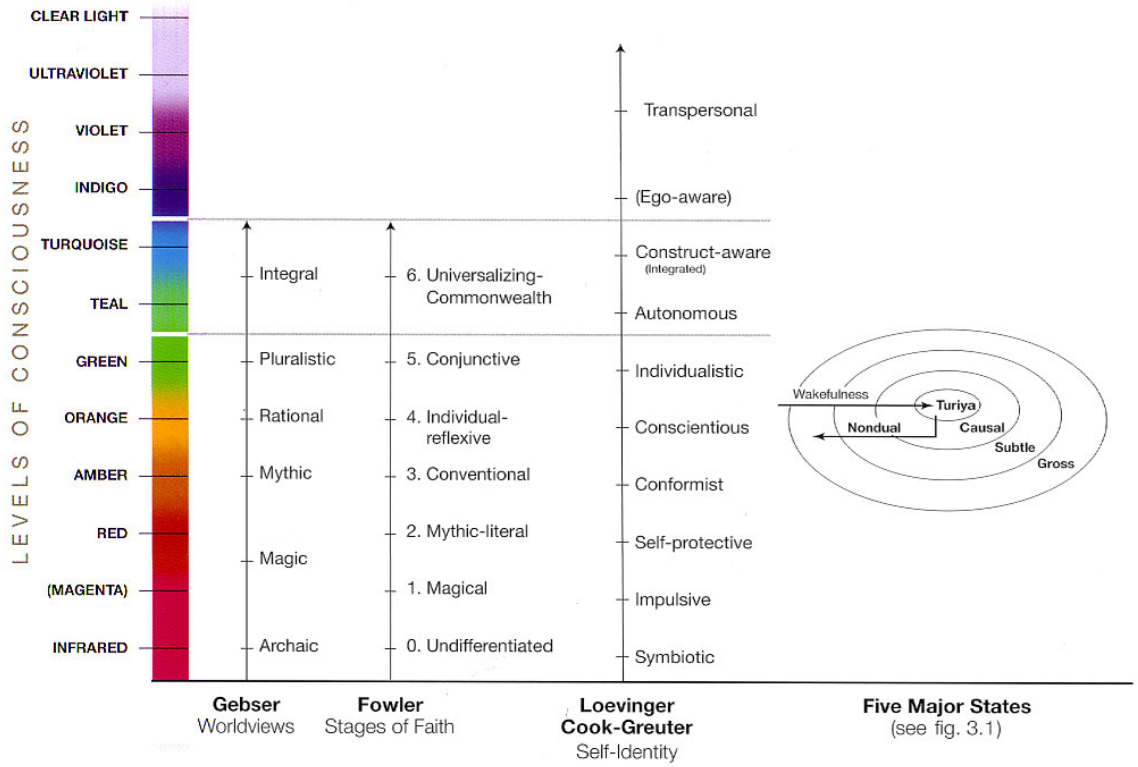
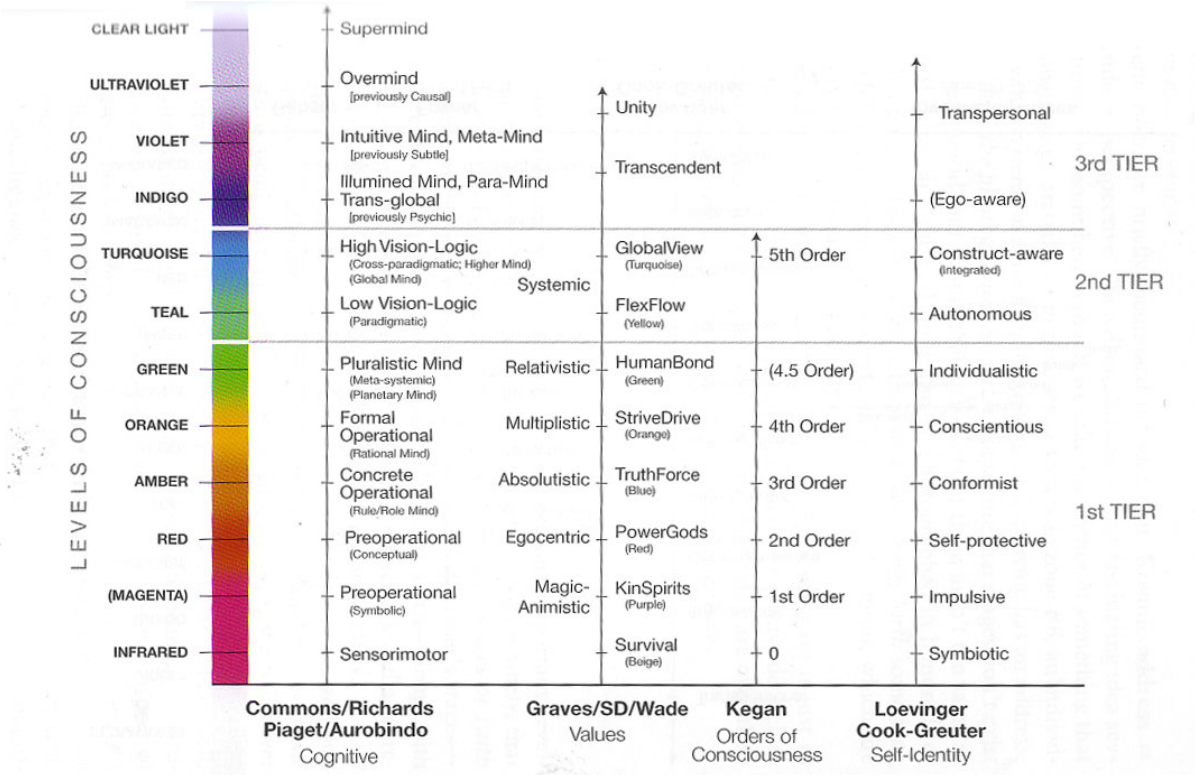


Figure 1.3. 8 Major Methodologies.

Diagram B1 from Wilber, 2007 (observations in color gray added)

Appendix C – Diagrams: Levels of development and Lines of intelligence (From Wilber, 2007)





Appendix C (cont.)

Psychograph diagram, Lines of intelligence, Quadrants and Levels of Development (Wilber, 2007)

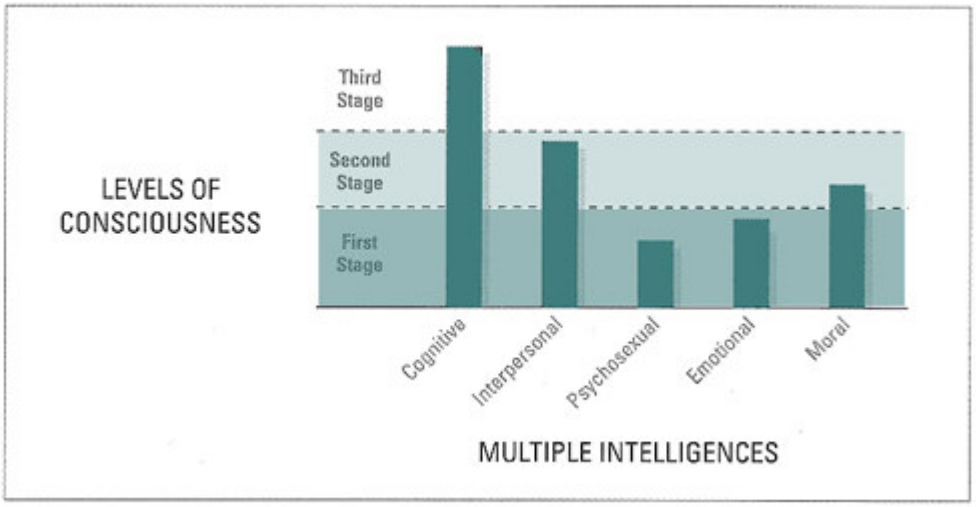


Image C1: Psychograph diagram - From Wilber, 2007 (colors added)

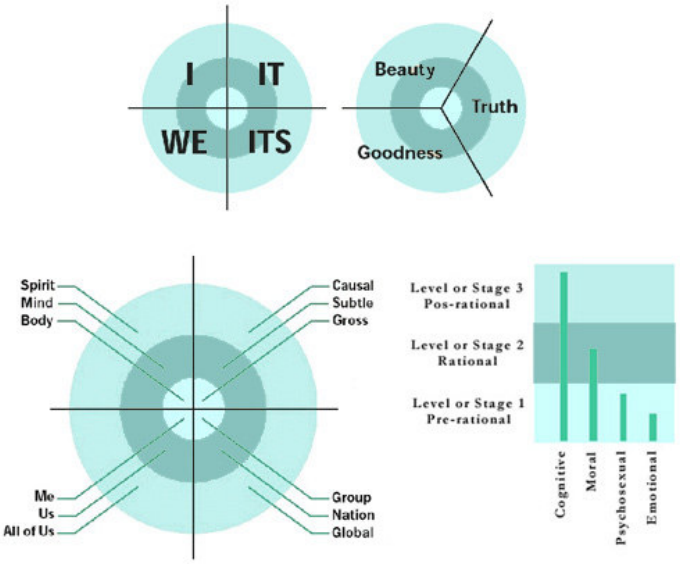


Image C2: Quadrants (upper left); the "big three" of beauty (aesthetics), goodness (morals) and truth (science and technology) (upper right); Levels of growth (lower left) & Psychograph (lower right)

From Wilber, 2007 (colors added)

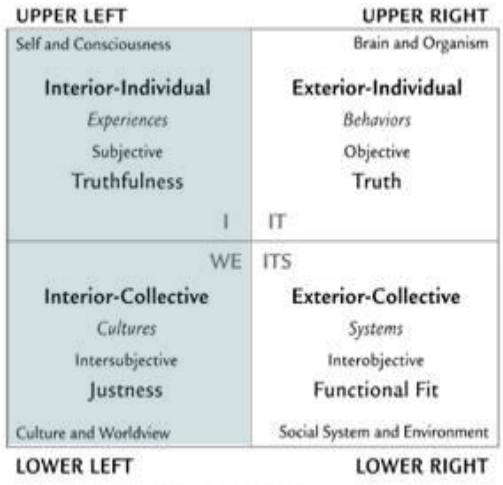


Image C3: Quadrants: The four dimensions of players' life and reality

From Gordon & Esbjörn-Hargens, 2007 (colors added)

Appendix D: Robert Kegan's (1994) descriptions of Levels of Development (growth from top to bottom) What is "subject" (Self) in a specific Level of development becomes the "Object" within the next higher Level, which embraces more complexity and freedom of choice and actions (Kegan, 1994).

Kegan's Subject – Object Dynamics

0. Incorporative Self (0-2 years)

Self	Object
Reflexes (seeing, moving)	No objects to have

Task: Object Permanence

1. Impulsive Self (2- 5/7 years)

Self	Object
Impulses & perceptions	Reflexes (seeing, moving)

Task: Self to control impulses

2. Imperial Self (5/7-12/18 years)

Self	Object
Needs, interests, wishes Private Life: "me"	Impulses & perceptions

Task: Shared reality with others

3. Interpersonal Self (12/18 – Adult years)

Self	Object
Interpersonal, mutuality Relations with others	Needs, interests, wishes

Task: Sense of autonomous self

4. Institutional Self (Adult years)

Self	Object
Authorship, identity, ideology	Relations with others

Task: Sense of multiple self

5. Interindividual Self (Adult years)

Self	Object
Weaving of personal systems	Authorship, identity, ideology

Task: Not self

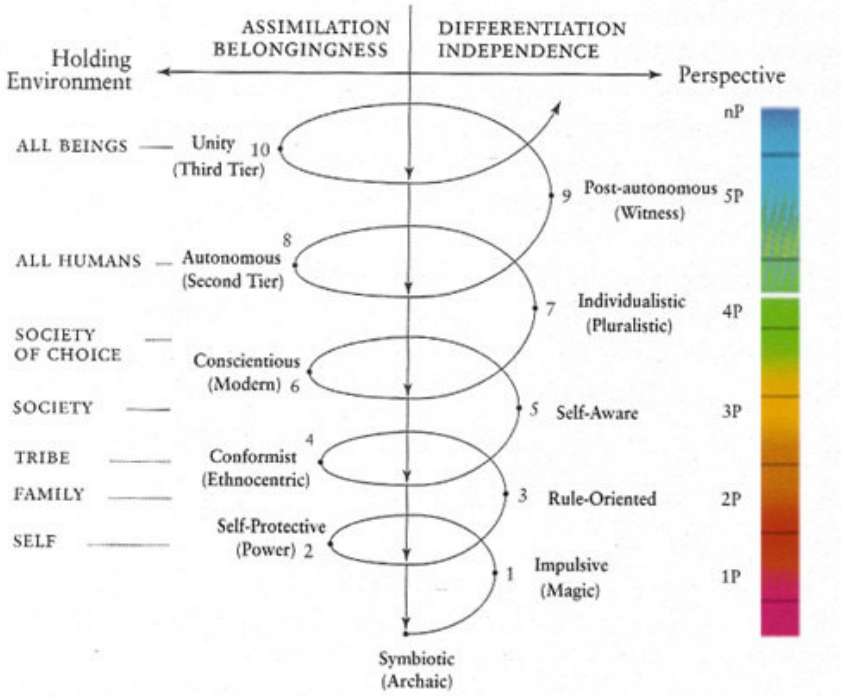
From handouts at JFK class on Human Development (Esbjörn-Hargens, 2005)

Appendix E

Different maps and diagrams of Levels of Development (applied to Individual and Collective)

Loevinger/Cook-Greuter (1999) and Beck & Cowan Spiral Dynamic theory

(From Wilber, 2007, colors added)



2.2b. Loevinger/Cook-Greuter (1990)

2.2c. Spiral Dynamics (1996)

Appendix F – Integral Play Framework

Tables F1 below are based on data from Gordon & Esbjörn-Hargens' (2007) Integral Play framework, and Integral Psychology (Wilber, 2007, 2000). Some definitions were omitted, added or modified according to my research subject:

(1) Quadrants: Individual, Collective, Exterior and Interior dimensions	
(UL) Upper Left - Subjective dimensions How is my subjective *experience* while playing a video game.	(UR) Upper Right - Objective & behavioral dimensions What *actions and behaviors* are induced by a video game.
(LL) Lower Left – Inter-subjective & cultural dimensions The *meaning* of my video game play experience.	(LR) Lower Right - Inter-objective & systemic dimensions What are the *structures, rules & systems* involved in a video game.

(2) Developmental levels of Players		
Play Self Level	Play Rhetoric	Developmental Stage (Sutton-Smith, 2003)
Unitive Player	"Trans-personal" – Spiritual video games	Frivolous oriented video games
Dynamic Player	Transition	Transition
Complex Player	Post-personal - Post-modern video games	Higher-Self oriented video games
Sensitive Player	Transition	Imaginative oriented video games
Status Player	Personal - Modern video games	Personality oriented & Progress oriented
Ordered Player	Transition	Social role oriented video games
Aggressive Player	Pre-personal - Pre-modern video games	Power oriented video games
Magical Player	Pre-personal - Pre-modern video games	Fate oriented video games

(3) Types or Styles of Players
Individual & Interior aspects: *Particular inner inclinations, talents, etc.*
Individual & Exterior aspects: *Particular behaviors, personality traits and body types, etc.*
Collective & Interior aspects: *Particular interpersonal, cultural, spiritual or religious beliefs and worldviews, etc.*
Collective & Exterior aspects: *Particular educational styles; video game themes, etc.*
Also personality types: Astrological archetypes; Myers-Briggs personality test, Enneagram system

(4) Lines of intelligence
Cognitive line - "What is this video game about?"
Emotional line - "How do I feel by playing this video game?"
Interpersonal capacity line- "How should I interact with other video game players?"
Moral judgment line – "What is right to do in playing this video game?"
Kinesthetic sense - "How do I move in this video game (or how do I move my body while playing it?)"
Spiritual line - "What is of ultimate concern in the core message of this video game?" (Wilber, 2007)
And many others…

(5) States of consciousness: Gross, Subtle and Causal, as well as Emotional states (see below)	
"Positive emotional States"	"Negative" emotional States
Excitation state	*Fear state*
Joy state	*Depression state*
Focus State	*Anger state*
Flow State	*Anxiety State*
Ecstasy state	*Frustration state*
Transpersonal state	*Confusion state*
And others…	And others…

Table F2: Transitional zones between each Play Self: (Table from Gordon & Esbjörn-Hargens, 2007)

Transition Zone	Transitional Play
Dynamic to Unitive Player	Koans, paradox
Complex to Dynamic Player	Meditation, Action Inquiry, spontaneity
Sensitive to Complex Player	Improvisation, Bohmian Dialogue, collaborative art projects
Status to Sensitive Player	Cooperative Games, rope courses, the arts
Ordered to Status Player	Stock market, business competitions
Aggressive to Ordered Player	Competitive sports, fair and party games
Magical to Aggressive Player	Gambling, betting on results

Observation:

As an example, this table presents what aspects each Play Self would need to be "challenged" in order to gradually move into the next developmental level. It addresses where to focus in terms of designing video games to intentionally facilitate players from any level of development (relative to any developmental Line of intelligence) to take more a directed, effective, and "playful" path towards inner growth.

Table F3: Potential negative aspects of each Play Self: (Table from Gordon & Esbjörn-Hargens, 2007)

Play Selves	Disaster
Unitive Player	Manipulation of subtle energies and people's spiritual longings for personal gain
Dynamic Player	Manipulation of the complexity of the situation for unfair personal gain
Complex Player	Using awareness of others' weakness against them
Sensitive Player	Intolerance of lack of participation
Status Player	Being deceptive, opportunistic, manipulating others for their own gain
Ordered Player	Rigidity, exclusivity, intolerance of individuality
Aggressive Player	Cruelty, incapacity for empathy
Magical Player	Unnecessarily suspicious

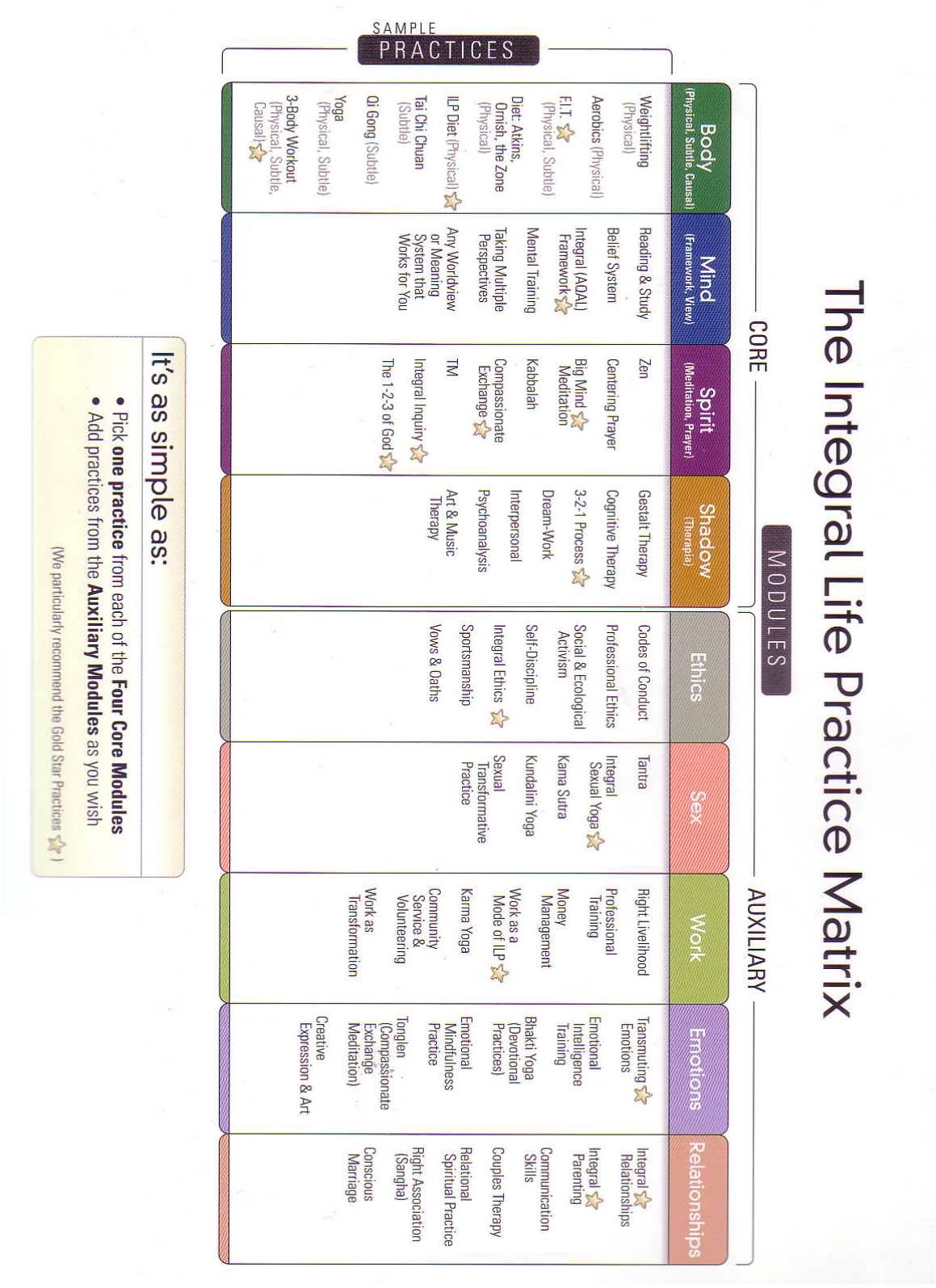
Figure 8. The Disasters of Play Selves

Observation:

When applied to my research topic, each of these potential "disasters" could be taken in account in the video game design, where a designer could either try to prevent them as much as possible, or "play" with these potentialities as "learning edges" to catalyze human development in relation to its five main aspects (see page 10).

The many potential applications of the two integrative and developmental concepts described in the tables F2 & F3 could take another whole research project.

Appendix G – Integral Life Practice framework: Modules and examples of practices



From the Integral Life Practice Kit (Integral Institute, 2006)

Appendix H

Phenomenological analysis of my subjective experience of playing some video games

Table H1 – Definitions (* Table on page 54)

In relation to the definitions of subjective measurements related to various aspects presented in the Table H1 (page 54), I proposed *3 qualitative grades, related to each one of the categories and sub-categories presented in the table with slightly different meanings (see below)*:

Strong (S)	Meaning strongly used or requested (Lines); strong intensity (States); clearly apparent or strongly impressive (Quadrants); strongly present (Integral Play).
Medium (M)	Meaning mildly used or requested (Lines); mild intensity (States); somewhat apparent or mildly impressive (Quadrants); mildly present (Integral Play).
Weak (W)	Meaning barely (or not) used or requested (Lines); low (or none) intensity; barely apparent or inexistent.(Quadrants); barely (or not) present (Integral Play).

I made use of these graduations to analyze three of the five main aspects related to human development (Quadrants, Lines, and States) (Wilber, 2007, see page 10), with exception of *Levels* and *Types*, which are discussed below. It is important to note that my graduations and classifications in the table reflected my own phenomenological experience of playing those video games, and may not coincide with the experience of other players, empirical observations and/or third, party reviews.

In relation to those five main developmental aspects and the Integral Play framework (Gordon & Esbjörn-Hargens, 2007), I considered the following sections and sub-sections represented in the Table H1:

(1) Quadrants My personal experience of the play in relation to:	
***(UL)* Upper Left** *Subjective dimensions of experience divided in:*	(i) intentionality - as related to exercising multiple choices and free will.
	(e) emotions - fear, anger, greed, envy, excitement, pride, lust, etc.
	(f) feelings - joy, compassion, confidence, affection, peacefulness, courage, etc.
***(UR)* Upper Right** Objective & behavioral dimensions, divided in:	(a) actions, (b) behaviors, and (p) physical movements.
(LL) Lower Left Inter-subjective & cultural dimensions, divided in:	(m) meanings, (r) relationships, and (c) cultural aspects.
(LR) Lower Right Inter-objective & systemic dimensions, divided in:	(r) rules, (v) virtual environments, (s) social systems.

(2) Levels
My personal experience of the play based on the *altitude (levels) scale of colors* (Wilber, 2007):

Higher Edge level of the play	Note: The altitude scale of colors refers to the grading of the following levels of development (from low to high): Magenta, Red, Amber, Orange, Green, Teal and Turquoise (Wilber, 2007).
Center of Gravity level of the play	
Lower Edge **level** of the play	

(3) Types
(4) My personal experience of the gender dynamics of the play related to:
(1) ***Feminine (Fem) vs. Masculine (Mas)***
(2) The most perceptible *Enneagram* aspects present in these video games, such as:
Main personality type (m#)
Integration towards type… (i#)
Disintegration towards type… (d#)
Wing types (w#).

(4) Lines of intelligence	
My personal experience of the dynamics of the play related to the:	
Line	**Typical Developmental Researcher**
Cognitive line – *What am I aware of?*	**Piaget, Kegan**
Kinesthetic line – *How should I physically do this? (I used it in terms of engaging more my full body)*	**Gardner**
Sensory-motor line – *How should I react to this quickly? (definition by writer)*	**Piaget**
Interpersonal line – *How should we interact?*	**Selman, Perry**
Moral line – *What is the right choice to make?*	**Kohlberg**
Spiritual line – *What is of ultimate concern?*	**Fowler**

Definitions based on Wilber (2007)

(5) States **of awareness:**
My personal experience in relation to: (involved during the play)
Gross state (physical body: kinesthetic dynamics)
Subtle state (subtle body: energetic dynamics)
Causal state (causal body: mindfulness dynamics)

(6) Play Selves
My personal experience in relation to the different *Levels of Play Selves* (Gordon & Esbjörn-Hargens, 2007) being exercised in the act of play. **See appendix F, table F1, item (2) Developmental Levels of Players**

Appendix H (cont.): Table H1

Table #1: Phenomenological experience of video games* based on AQAL and Integral Play categories (see label descriptions in Appendix #1 in page 42)

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Video Games**	Bioshock	Need for Speed	Fifa Soccer 2006	The Sims 2	Guitar hero III	Dance Dance Revolution	Rockband	GTA San Andreas 3	Second Life	Big Brother Brazil	Lula 3D	Journey into the Wild Divine
2	**Categories**	Action	Racing	Sports	Simulation	Musical	Musical	Musical	Indie	MMO Community	Community	Adult Sex	Spiritual
3													
4	***AQAL***												
5	**Quadrants**												
6	Upper Left	Si Se Mf	Wi Se Wf	Mi Se Wf	Mi Me Mf	Wi Se Sf	Wi Se Sf	Wi Se Sf	Wi Se Wf	Si Se Sf	Wi Me Mf	Wi Me Wf	Si Me Mf
7	Upper Right	Sa Sb Wp	Sa Wb Mp	Sa Mb Wp*	Wa Sb Wp	Sa Wb Mp	Sa Wb Sp	Sa Wb Sp	Sa Sb Wp	Ma Sb Wp	Wa Sb Wp	Wa Mb Wp	Ma Mb Wp
8	Lower Left	Mm Wr Mc	Wm Wr Wc	Wm Mr Mc	Mm Sr Sc	Wm Mr Mc	Wm Sr Mc	Wm Mr Mc	Wm Wr Mc	Mm Sr Sc	Wm Sr Sc	Wm Mr Mc	Sm Mr Sc
9	Lower Right	Mr Sv Ms	Mr Sv Ms	Sr Sv Ss	Sr Mv Ss	Mr Sv Ws	Mr Wv Ws	Mr Sv Ws	Mr Sv Sc	Wr Sv Ss	Sr Wv Ss	Mr Mv Sc	Mr Mv Ms
10	**Levels**												
11	Higher edge	Teal	Orange	Orange	Green	Orange	Orange	Orange	Orange	Integral	Green	Orange	Teal
12	Center of gravity	Orange	Amber	Amber	Amber	Amber	Amber	Amber	Red	Green	Amber	Red	Green
13	Lower edge	Red	Red	Red	Red	Red	Red	Red	Magenta	Red	Red	Magenta	Amber
14	**States**												
15	Gross	S	S	S	S	S	S	S	S	M	S	S	M
16	Subtle	M	M	M	M	S	S	S	M	M	M	M	S
17	Causal	W	W	W	W	M	M	M	W	W	W	W	M
18	**Lines**												
19	Cognitive	M	M	M	M	M	M	M	M	M	M	M	M
20	Emotional	M	W	W	M	M	M	M	W	S	M	W	M
21	Interpersonal	W	W	M	S	M	S	S	W	S	S	M	M
22	Kinesthetic	S	S	S	W	S	S	S	S	W	W	W	M
23	Sensory-motor	S	S	S	W	S	S	S	S	W	W	W	W
24	Moral	M	W	W	M	W	W	W	W	M	M	W	M
25	Spiritual	W	W	W	W	W	W	W	W	W	W	W	S
26	**Types**												
27	Gender dynamics	Mas	Mas	Mas / Fem	Mas / Fem	Mas / Fem	Mas / Fem	Mas / Fem	Mas	Mas / Fem	Mas / Fem	Mas	Mas / Fem
28	Enneagram	m8 i2 w9	m7 d1	m7 d1	m9 i3 w8	m7 d1	m7 d1	m7 d1	m8 w7	m7 i5	m3 d9 w2	m8 w7 i2	m9 i3 w1
29													
30	***Integral Play***												
31	**Play selves**												
32	Magical	M	W	W	W	W	W	W	S	S	W	M	M
33	Aggressive	S	M	M	W	W	W	W	S	W	W	M	W
34	Ordered	W	W	S	S	M	M	M	W	S	S	W	M
35	Status	M	S	S	S	S	S	S	S	S	S	M	M
36	Sensitive	M	W	M	S	M	M	M	W	S	M	W	S
37	Complex	M	W	W	M	W	W	W	W	S	M	W	M
38	Dynamic	W	W	W	W	W	W	W	W	W	W	W	M
39	Ego-aware	W	W	W	W	W	W	W	W	W	W	W	M

* Partial list of video games to be completed, see full list on pages 11 & 12.

Appendix I – Extra references used in the mixed-methods research

Besides collecting different qualitative and qualitative data from all the 6 methodologies briefly described in Appendix B and listed in the references, I collected data from other sources in many informal ways, which were naturally used as a background reference to add, compare and contrast the overall research data. In terms of events attended, besides attending 5 full days at GDC 2008 (around 25 lectures plus expo, awards and workshops), I went to the *Wired NextFest 2007* in Los Angeles on September 14, 2007; the *GameWorks* entertainment complex in Las Vegas in September 12, 2007; and visited the stores *GameStop* and *Frys's* (Pleasant Hill, CA) several times from October 2007 to May 2008, where I had the chance to observe video gamers playing in different consoles.

I also gathered data from various specific websites during this time (gamasutra.com, seriousgames.org, gamesforhealth.org, gamesforchange.org, yahoogames.com, gamespot.com, ign.com, edugamesblog.wordpress.com, meaningfulplay.msu.edu, interactivemediainstitute.com, gameslearningsociety.org, and many others); including subscribing to some online discussion groups. I also constantly watched for daily news (yahoo, ABC, CNN); subscribed to video game magazines from January 2008 to June 2008 (Edge, Electronic Gaming Monthly, XBOX, Playstation, PC Gamer, etc.); and watched many movies and documentaries, including: *Rise of the Video Game Levels 1 to 5* (Discovery Channel, 2007), *Video Game Invasion: The History of a Global Obsession* (2004), *Video Games: Behind the Fun* (2007), *Classic Game Room* (2007), and *The King of Kong* (2007).

In terms of video games recently played, I "action-researched": Action-Strategy games (*Portal,* completed in around 35 hours) and B*ioshock*, completed in around 40 hours); and into a lesser extend: (3) MMORPG (*World of War Craft*) and RPG games (*Mass Effect*, *GTA* San *Andreas 3, Jade Empire, Deus-Ex);* (4) Racing games (*Need for Speed*); (5) Sport games (*Fifa Soccer 2006*, *Wii Sports, Wii Fit);* (6) Simulation games (*The Sims 2, Flight Simulator X, Sim City 4*); (7) Adventure games (*Super Mario Galaxy*); (8) Entertainment & Musical games (*Guitar hero III*, *Dance Dance Revolution, Rockband*); (9) Community games (*Second Life* MMO, *Big Brother Brazil*), (10) Adult and Sexual content (*Lula 3D*); (11) Spiritual & Subtle games (*Journey into the Wild Divine*); (12) Indie games (*World of Goo, Crayon Physics, Flow*); and (13) Various *Serious Games* on training, simulations, social change, health, and education.

Appendix J – Further lines of exploration

In terms of recommendations for future research, I consider important to explore in more depth the potentially "negative" potentials of video game and their relationship with the five main aspects related to human development, and how to possibly prevent these negative effects as much as we can in new and alternative video game designs. I say that especially in relation to the uses I intended in my research topic, which according to different situations (and players) could also bring potential issues not envisioned yet. These issues would include video games potentially promoting violence, aggression, addiction, physical injuries, "disembodiment", fragmentation, emotional problems, interpersonal issues (due to addiction), and alienation. Besides that, other individual, material, cultural and social issues would certainly continue to appear, disappear and/or co-exist with all the great potentials that lie ahead in their path. As I said during my Integral Research class presentation at John F. Kennedy University (March 2008): *"I don't know what could be the negative extent of some of those potentials issues, neither what's really going to happen in the future. The only thing I know is one thing – That there is no way back!"*

I would also apply the Integral Play Theory framework (Gordon & Esbjörn-Hargens, 2007) to a series of comparative studies about the relationships between various video game genres, video game players and Play Selves, as well as how to better apply these findings into designing more customized and efficient developmental games. I can also already envision a new video game rating that would go way beyond (both in depth and span) the current entertainment ratings already being applied in the market. Instead, a video game from a new developmental generation would also include ratings based on the *five main aspects of human development* (Quadrants, Levels, Lines, States and Types) and Integral Play's categories of Play Selves, qualitatively covering all aspects of these frameworks relative to what this video game was designed to provide.

In addition to that, I would also explore with more depth other Lines of Development such as Fowler's Lines of Faith, and Kohlberg's Lines of Morals, which have intrinsic connections to the ontological, existential, and spiritual aspect of my research. I would also explore more extensively both somatic and kinesthetic developmental applications in video games, in order to better understand the potentials of using emergent and upcoming technologies

- e.g.: Biofeedback (Wild Divine, NeuroSky, and upcoming Emotiv EEG interfaces, which can recognize various basic emotions and use this data to interface with the games in a myriad of potentially useful developmental applications); 3D interfaces (upcoming from Apple); 3D displays (Zalman) and Domes (Z-Dome); Sensing mouse (Haptix); and camera and movement recognition (full body and partial body) devices (Zcam, Cam-Trax, EyeTech, Nintendo Wii & Wii Fit).

Finally, I would dive more deeply in some of the pressing educational, psychological, behavioral, cultural and social issues being discussed in the academic fields of video game and virtual simulators nowadays in order to better integrate them with my topic of research, supporting both these fields and the fields of developmental and integral psychology (theory and applications) to cross-pollinate and further expand into powerful multi-disciplinary partnerships.